Angioinvasive Aspergillus

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Patient Case

- 34 year old gentleman
- Presented to the ER with persistent perianal abscess despite a course of antibiotics
- No significant medical history or surgical history
- 17 pack year smoking history
Initial Bloodwork

• Significant lab values:
  – HgB of 95
  – MCV 112
  – WBC of 1.9
  – PMN count of 0.2

Seemingly healthy young gentleman with these abnormal lab results prompted further investigation with bone biopsy
Bone Biopsy Results

- Consistent with T-Cell Acute Lymphoblastic Leukemia (ALL)
Treatment

• Started on AL4 chemotherapy protocol complicated by DVT of right PICC line and peripheral neuritis leading to discontinuation of vincristine and L-asparaginase
• As a result, the patient had to undergo an allogeneic bone marrow transplant approximately 9 months after ALL diagnosis
Short-Term Complications Post Transplant

• Acute graft vs host disease, bowel and skin
• Hypogammaglobulinemia
Long-Term Complications

• May 2015:
  – Started having progressive shortness of breath, dry cough with occasional clear sputum

• June 2015:
  – Diagnosed with bronchiolitis obliterans syndrome

• Progressively worsening respiratory symptoms and worsening airflow obstruction on PFTs

• October 2015
  – Started having hemoptysis...
Chest Radiograph
Chest Radiograph
CT of Chest
CT of Chest
Next Step

• Imaging findings prompted bronchoalveolar lavage to confirm diagnosis
Bronchoalveolar Lavage

H&E stain of fungal hyphae branching at 45 degree angles
Bronchoalveolar Lavage

- Confirmed *Aspergillus ustus* and *Mycobacterium fortuitum*
Aspergillosus

- The Aspergillus species is ubiquitous in soil
- 5 types of pulmonary aspergillosis:
  1) saprophytic aspergillosis (aspergilloma)
  2) hypersensitivity reaction (allergic bronchopulmonary aspergillosis)
  3) semi-invasive (chronic necrotizing) aspergillosis,
  4) airway-invasive aspergillosis (acute tracheobronchitis, bronchiolitis, bronchopneumonia, obstructing bronchopulmonary aspergillosis), and
  5) angioinvasive aspergillosis
Angioinvasive Aspergillosus

- Exclusively in immunocompromised patients with very low neutrophil count
- Hyphae invades small to medium-sized pulmonary arteries, causing occlusion, hemorrhage and infarction
- Occurs in up to 10% of stem-cell transplant patients
- Poor prognosis, high mortality
CT Imaging

- Findings are related to infarction:
  1) Peripheral, pleural-based, wedge-shaped consolidation

2) Halo sign (surrounding ground glass opacity) representing nodules surrounded by parenchymal hemorrhage
CT Imaging

- Cavitary lesions
- Sometimes will also see air-crescent sign: separation of necrotic tissue from adjacent parenchyma causes an air crescent
- Seen during convalescence after treatment of resolution of neutropenia